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PATENT ABSTRACTS OF JAPAN

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(71)Applicant : AMP JAPAN LTD

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(72)Inventor : TODA SHINSAKU

KODAMA HIROMITSU

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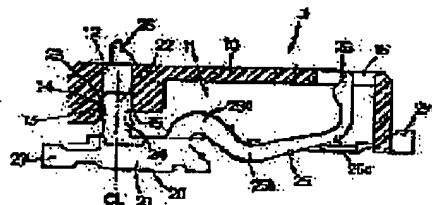
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(54) ELECTRICAL CONNECTOR

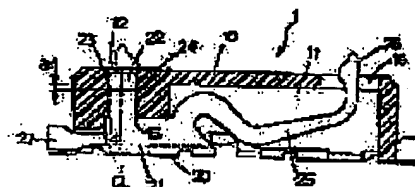
(57)Abstract:

PROBLEM TO BE SOLVED: To provide an electrical connector comprising a contact easy to be inserted and having at least one pair of engagement projected parts, which are to be engaged and fixed in a housing and are positioned at asymmetrical positions on the center line.

SOLUTION: This electrical connector 1 is provided with a housing 10 and a contact 20 having contact installation part engaged and fixed in a contact installation hole 12 of the housing 10. In both sides of a contact installation part 22, at least one pair of a first engagement projected part 23 and a second engagement projected part 24 are formed and projected, so as to be positioned at a prescribed distance from each other along the insertion direction of the contact 20 and so as to be asymmetrical to each other on the center line CL of the contact 20. A contact insertion inlet 13 is formed in the contact installation hole 12, and the inlet 13 has a pair of a first inclining face 14 and a second inclining face 15 with which the first and the second engagement projected parts 23, 24 are brought into contact at the same time with the insertion of the contact 20.



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CLAIMS

[Claim(s)]

[Claim 1] In the electrical connector possessing housing which has a contact attaching hole, and the contact which has the contact attachment section by which stop immobilization is carried out in said contact attaching hole of this housing On both sides of said contact attachment section, while stop immobilization is carried out in said contact attaching hole Carry out predetermined spacing detached building ***** mutually along the path of insertion of said contact, and project and at least one pair of 1st and 2nd stop projections which become unsymmetrical to the center line of said contact are formed. The electrical connector characterized by preparing contact insertion opening with which the both sides of said 1st and 2nd stop projection at the time of insertion of said contact have one pair of 1st and 2nd inclined planes which contact abbreviation coincidence in said contact attaching hole.

[Claim 2] The contact by which stop immobilization is carried out is provided in said contact attaching hole of housing which has a contact attaching hole, and this housing. This contact A base, The cantilever-like spring section which has the Tyne Handa section which extends from the 1 side of this base, and the contact section which extends from a side besides said base, and which contacts at a tip on the inferior surface of tongue of a partner substrate, In the electrical connector which extends to the upper part from between said Tyne Handa section of said base, and said spring sections and which possesses the contact attachment section by which stop immobilization is carried out in said attaching hole At least one stop projection by which stop immobilization is carried out is prepared in said contact attaching hole at the side edge by the side of said spring section of said contact attachment section. The electrical connector characterized by the side edge by the side of said Tyne Handa section of said contact attachment section being a straight-line-like side edge in alignment with the straight-line-like side attachment wall of said contact attaching hole.

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EFFECT OF THE INVENTION

[Effect of the Invention] According to the electrical connector concerning claim 1, carry out predetermined spacing detached building ***** mutually along the path of insertion of contact, and receive a contact center line at the contact attachment section. Project and at least one pair of 1st and 2nd stop projections which become unsymmetrical are formed. Since the both sides of the 1st and 2nd stop projection at the time of contact insertion have prepared contact insertion opening which has one pair of 1st and 2nd inclined planes which contact abbreviation coincidence in the contact attaching hole. In case the contact attachment section is inserted in a contact attaching hole, while the contact attachment section does not incline to the center line of a contact attaching hole but can insert contact easily by the 1st stop projection and the 2nd stop projection, the location of the contact section of contact does not vary and is stabilized.

[0023] Moreover, it is since at least one stop projection by which stop immobilization is carried out is prepared in the contact attaching hole at the side edge by the side of the spring section of the contact attachment section according to the electrical connector concerning claim 2, In case a partner substrate is contacted in the contact section of contact, a stop projection clings to the side attachment wall of a contact attaching hole by the angular moment by the side of the spring section which acts on the contact attachment section, and the posture over the contact attaching hole of the contact attachment section is maintained, without the stop force over the side attachment wall of the contact attaching hole of a stop projection becoming weaker. For this reason, predetermined contact force can be maintained, without the location of a point of contact with the partner substrate of the contact section which exists at the tip of the spring section shifting caudad. Moreover, since the side edge by the side of the Tyne Handa section of the contact attachment section is a straight-line-like side edge in alignment with the straight-line-like side attachment wall of a contact attaching hole, the side edge by the side of the Tyne Handa section of the contact attachment section is guided in accordance with the straight-line-like side attachment wall of a contact attaching hole at the time of insertion to the contact attaching hole of the contact attachment section, and, as for the side edge by the side of the Tyne Handa section, posture maintenance is made with the straight-line-like side attachment wall of a contact attaching hole after insertion.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the electrical connector which equipped housing with the contact which has the stop projection by which stop immobilization is carried out.

[0002]

[Description of the Prior Art] What is shown in drawing 4 is known as this conventional kind of an electrical connector (refer to U.S. Pat. No. 5,064,391 official report). This electrical connector 100 consists of conductive shell 102 prepared in housing 101 so that two or more contacts 103 by which stop immobilization is carried out, and these contacts 103 might be covered in housing 101 and housing 101.

[0003] As shown in drawing 4 (B), one pair of stop projections 104 and 105 by which stop immobilization is carried out are projected and formed in the contact acceptance slot 106 of housing 101 from both sides at each of contact 103. And it is mutually separated from the location of the stop projections 104 and 105 of the distance of H along the path of insertion of contact 103, and it is unsymmetrical to the center line CL of contact 103. Thus, the location of the stop projections 104 and 105 was made unsymmetrical for making it possible to narrow the pitch between the adjoining contact 103 and 103. On the other hand, the contact acceptance slot 106 of the housing 101 with which stop immobilization of the contact 103 is carried out has the contact insertion opening 107 which becomes broad towards a contact insertion edge, and makes insertion of contact 103 easy.

[0004] Moreover, what is shown in drawing 5 is known as other conventional electrical connectors. (Refer to JP,3-95584,U)

This electrical connector 300 possesses the housing 310 which has two or more contact attaching holes 311 established in juxtaposition, two or more contacts 320 by which stop immobilization is carried out in the contact attaching hole 311 of housing 310, and the slider 330 which presses the flat cable 340 inserted into housing 310 to the contact section 325 of contact 320.

[0005] Among these, the Tyne Handa section 326 in which each of contact 320 extends from the 1 side of a base 321 and a base 321 and by which solder connection is made at the circuit board 350, The cantilever-like spring section 324 which has the contact section 325 which extends from a side besides a base 321, and which contacts at a tip on the inferior surface of tongue of a flat cable 340, The contact attachment section 322 by which stop immobilization is carried out is provided in the contact attaching hole 311 which extends to the upper part from between the Tyne Handa section 326 of a base 321, and the spring sections 324. And two stop projections 323 by which stop immobilization is carried out are formed in the contact attaching hole 311, and the side edge by the side of the spring section 324 of the contact attachment section 322 is a straight-line-like side edge in alignment with the straight-line-like side attachment wall of the contact attaching hole 311 at the side edge by the side of the Tyne Handa section 326 of the contact attachment section 322.

[0006]

[Problem(s) to be Solved by the Invention] However, if it is in the conventional electrical connector 100 shown in drawing 4 In case contact 103 is inserted in the contact acceptance slot 106 of housing 101 Since while is located in them, and only the distance of H contacts previously rather than the stop projection 105 contacts the single-sided wall of the contact insertion opening 107 and the stop projection 104 of another side contacts an another side wall, There was a trouble that contact 103 rotated in the direction of A shown in drawing 4 (B), and contact 103 could not be inserted easily.

[0007] Moreover, if it is in the conventional electrical connector 300 shown in drawing 5, in contact 320, the stop projection 323 by which stop immobilization is carried out is formed in the contact attaching hole 311 at the side edge by the side of the Tyne Handa section 326 of the contact attachment section 322, and it is not prepared in the side edge by the side of the spring section 324 which has the contact section 325 in contact with the inferior surface of tongue of a flat cable 340. Although the angular moment which turns the spring section 324 caudad, bends and rotates towards the spring section 324 side in the contact attachment section 322 will arise when inserting a slider 330 into housing 310 and pressing a flat cable 340 in the contact section 325 of contact 320, the stop force over the contact attaching hole 311 of the stop projection 323 might become weaker by this angular moment, and the posture over the contact attaching hole 311 of the contact attachment section 322 might incline. For this reason, the location of a point of contact with the flat cable 340 of the contact section 325 which exists at the tip of the spring section 324 shifted caudad, and there was a problem of being hard to maintain predetermined contact force.

[0008] Therefore, the purpose of this invention is to offer the electrical connector which has in housing the contact by which stop immobilization is carried out, and which made the unsymmetrical location the location of at least one pair of stop projections to the center line, and can insert the contact in it easily.

[0009] Moreover, by maintaining the posture over the contact attaching hole of the contact attachment section in contact, other purposes of this invention maintain the location of a point of contact with the partner substrate of the contact section, and are to offer the electrical connector which can maintain predetermined contact force certainly.

[0010]

http://www4.ipdl.ncipi.go.jp/cgi-bin/tran_web.cgi_ejje

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[Means for Solving the Problem] In the electrical connector possessing housing with which the electrical connector concerning this invention has a contact attaching hole, and the contact which has the contact attachment section by which stop immobilization is carried out in said contact attaching hole of this housing. On both sides of said contact attachment section, while stop immobilization is carried out in said contact attaching hole. Carry out predetermined spacing detached building ***** mutually along the path of insertion of said contact, and project and at least one pair of 1st and 2nd stop projections which become unsymmetrical to the center line of said contact are formed. It is characterized by preparing contact insertion opening with which the both sides of said 1st and 2nd stop projection at the time of insertion of said contact have one pair of 1st and 2nd inclined planes which contact abbreviation coincidence in said contact attaching hole.

[0011] Moreover, housing with which the electrical connector concerning this invention has a contact attaching hole, The contact by which stop immobilization is carried out is provided in said contact attaching hole of this housing. This contact A base, The cantilever-like spring section which has the Tyne Handa section which extends from the 1 side of this base, and the contact section which extends from a side besides said base, and which contacts at a tip on the inferior surface of tongue of a partner substrate, In the electrical connector which possesses the contact attachment section by which stop immobilization is carried out in said contact attaching hole which extends to the upper part from between said Tyne Handa section of said base, and said spring sections. At least one stop projection by which stop immobilization is carried out is prepared in said contact attaching hole at the side edge by the side of said spring section of said contact attachment section. It is characterized by the side edge by the side of said Tyne Handa section of said contact attachment section being a straight-line-like side edge in alignment with the straight-line-like side attachment wall of said contact attaching hole.

[0012]

[Embodiment of the Invention] The gestalt of operation of this invention is explained with reference to a drawing. Drawing 1 shows the electrical connector of 1 operation gestalt of this invention, (A) is a top view and (B) is a front view. Drawing 2 shows the cross section which met 2-2 line of drawing 1 (A), and the sectional view in which (A) shows the stop initiation condition to housing of predetermined contact, and (B) are the sectional views showing the condition after stop immobilization in housing of said contact. However, the cross section of the contact has not been carried out.

[0013] In drawing 1 and drawing 2, the electrical connector 1 possesses the housing 10 which has two or more contact attaching holes 12, and two or more contacts 20 which have the contact attachment section 22 by which stop immobilization is carried out in the contact attaching hole 12 of housing 10.

[0014] Each of contact 20 is what is formed by piercing a metal plate. A base 21, The Tyne Handa section 27 by which extends from the left-hand side (left-hand side in drawing 2) of a base 21, and solder connection is made at the pad on a substrate, It extends from the right-hand side of a base 21, and the contact attachment section 22 which projects in the upper part from between the cantilever-like spring section 25 which has the contact section 26 in contact with the pad prepared at the tip at the partner substrate, and the Tyne Handa sections 27 of a base 21 and the spring sections 25 is provided. The spring section 25 was prolonged in the slanting lower part through 1st bend 25a while it was prolonged in the upper part from the right-hand side of a base 21, and it is further prolonged in the slanting upper part through 2nd bend 25b. The contact section 26 is prolonged in the upper part from tip 25c of the spring section 25.

[0015] Two or more pairs (they are two pairs if it is in this operation gestalt) of 1st stop projections 23 and the 2nd stop projection 24 by which stop immobilization is carried out are projected and formed in the opposite side attachment wall of the contact attaching hole 12 of housing 10 at the both sides of the contact attachment section 22 of contact 20. The 1st stop projection 23 and the 2nd stop projection 24 leave only spacing W mutually along the path of insertion (the direction of [from the bottom in drawing 2 (B) / upper]) of contact 20, are located, and are unsymmetrical to the center line CL of contact 20. The front face of the contact path of insertion of the 1st stop projection 23 and the 2nd stop projection 24 is formed in the inclined plane so that the contact attachment section 22 may be easily inserted in the contact attaching hole 12.

[0016] Two or more contact hold paths 11 in which contact 20 is held are established in a longitudinal direction (the vertical direction in drawing 1 (A)) at juxtaposition, and the opening 16 for the contact sections in which the contact attaching hole 12 where stop immobilization of the contact attachment section 22 is carried out, and the contact section 26 project is formed in each contact hold path 11 at housing 10. The contact attaching hole 12 and the opening 16 for the contact sections are formed by turns in the longitudinal direction of housing 10 (refer to drawing 1 (A)). The contact attaching hole 12 extended in the upper part from the contact hold path 11, and is penetrated on the top face of housing 10. The contact insertion opening 13 with which the both sides of the 1st stop projection 23 and the 2nd stop projection 24 have one pair of 1st inclined planes 14 and the 2nd inclined plane 15 which contact abbreviation coincidence at the time of insertion of contact 20 is formed in the contact attaching hole 12.

[0017] The contact attachment section 22 of contact 20 is inserted in the contact attaching hole 12 of housing 10, and in case stop immobilization is carried out, as shown in drawing 2 (A), each of the 1st stop projection 23 of the contact attachment section 22 and the 2nd stop projection 24 contacts the 1st inclined plane 14 and the 2nd inclined plane 15 of the contact insertion opening 13 first at abbreviation coincidence. For this reason, in the case of contact insertion, by the 1st stop projection 23 and the 2nd stop projection 24, the contact attachment section 22 does not incline to the center line of the contact attaching hole 12, but can insert contact 20 easily. And if the contact attachment section 22 is pushed in further, as shown in drawing 2 (B), the 1st stop projection 23 and the 2nd stop projection 24 of the contact attachment section 22 will eat into the opposite side attachment wall of the contact attaching hole 12, and stop immobilization of the contact attachment section 22 will be carried out in the contact attaching hole 12. In this case, since it is fixed to housing 10 in the condition that the contact attachment section 22 does not incline to the center line of the contact attaching hole 12, the height location of the vertical direction (the vertical direction in drawing 2 (A)) of the contact section 26 does not vary, and is stabilized.

[0018] Next, other operation gestalten of this invention are explained with reference to drawing 3. Drawing 3 is the sectional view of other operation gestalten of electric contact of this invention.

[0019] In drawing 3, the electrical connector 200 possesses two or more contacts 220 by which stop immobilization is carried out in the contact attaching hole 212 of the housing 210 which has two or more contact attaching holes 212, and housing 210 like the

electrical connector 1 shown in drawing 1 and drawing 2. Housing 210 had the same configuration as the housing 10 of an electrical connector 1, and abbreviation shown in drawing 1 and drawing 2, and is equipped with two or more contact hold paths 211 which were established in juxtaposition in the longitudinal direction (direction which intersects perpendicularly to the space of drawing 3) and in which contact 220 is held. The opening 213 for the contact sections in which the contact attaching hole 212 where stop immobilization of the contact attachment section 222 mentioned later is carried out, and the contact section 225 project is formed in each contact hold path 211. And the contact attaching hole 212 and the opening 213 for the contact sections are arranged by turns in the longitudinal direction of housing 210.

[0020] Each of contact 220 is what is formed by piercing and processing a metal plate like the contact 20 of the electric contact 1 shown in drawing 1 and drawing 2. A base 221, The Tyne Handa section 226 which extends from the left-hand side (left-hand side in drawing 3) of a base 221 and by which solder connection is made at the circuit board (not shown), The cantilever-like spring section 224 which has the contact section 225 which extends from the right-hand side of a base 221, and which contacts at a tip on the inferior surface of tongue of a partner substrate (not shown), The contact attachment section 222 by which stop immobilization is carried out is provided in the contact attaching hole 212 which extends to the upper part from between the Tyne Handa section 226 of a base 221, and the spring sections 224. The spring section 224 was prolonged in the slanting lower part through 1st bend 224a, and is further prolonged in the slanting upper part through 2nd bend 224b while it is prolonged in the upper part from the right-hand side upper part of a base 221. The contact section 225 is prolonged in the upper part from point 224c of the spring section 224.

[0021] The configuration of the contact attachment section 222 of contact 220 is different from the configuration of the contact attachment section 22 of the contact 20 of the electric contact 1 shown in drawing 1 and drawing 2. That is, two stop projections 223a and 223b by which stop immobilization is carried out are formed in the contact attaching hole 212, and side edge 212b by the side of the Tyne Handa section 226 of contact attachment **** 222 has become a straight-line-like side edge in alignment with the straight-line-like side attachment wall of the contact attaching hole 212 at side edge 212a by the side of the spring section 224 of the contact attachment section 222. It differs from the contact 320 of the electrical connector 300 of the conventional example shown in drawing 5. Since two stop projections 223a and 223b by which stop immobilization is carried out are formed in the contact attaching hole 212 at side edge 212a by the side of the spring section 224 of the contact attachment section 222. In case a partner substrate is contacted in the contact section 225 of contact 220, the stop projection 223 bites side-attachment-wall 212a of the contact attaching hole 212 by the angular moment by the side of the spring section 224 which acts on the contact attachment section 222. The posture over the contact attaching hole 212 of the contact attachment section 222 is maintained without the stop force over side-attachment-wall 212a of the contact attaching hole 212 of the stop projection 223 becoming weaker. For this reason, predetermined contact force can be maintained, without the location of a point of contact with the partner substrate of the contact section 225 which exists at the tip of the spring section 224 shifting caudad. On the other hand, since side edge 212b by the side of the Tyne Handa section 226 of the contact attachment section 222 is a straight-line-like side edge in alignment with the straight-line-like side attachment wall of the contact attaching hole 212, side edge 212b by the side of the Tyne Handa section 226 of the contact attachment section 222 is guided in accordance with the straight-line-like side attachment wall of the contact attaching hole 212 at the time of insertion to the contact attaching hole 212 of the contact attachment section 222, and, as for said side edge 212b, posture maintenance is made with said side attachment wall after insertion.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The electrical connector of this invention is shown. (A) is a top view and (B) is a front view.

[Drawing 2] The cross section which met 2-2 line of [drawing 1] (A) is shown, and the sectional view in which (A) shows the stop initiation condition to housing of one contact, and (B) are the sectional views showing the condition after stop immobilization in housing of said contact.

[Drawing 3] It is the sectional view of other operation gestalten of the electrical connector of this invention.

[Drawing 4] It is the important section sectional view in which the electrical connector of the conventional example is shown, (A) shows a perspective view and (B) shows the important section of contact.

[Drawing 5] It is the sectional view of the electrical connector of other conventional examples.

[Description of Notations]

- 1,200 Electrical connector
- 10,210 Housing
- 12,212 Contact attaching hole
- 13 Contact Insertion Opening
- 14 1st Inclined Plane
- 15 2nd Inclined Plane
- 20,220 Contact
- 22,222 Contact attachment section
- 23 1st Stop Projection
- 24 2nd Stop Projection

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(71) 出願人 000227995

日本エー・エム・ピー株式会社

神奈川県川崎市高津区久本3丁目5番8号

(72) 発明者 戸田 晋作

神奈川県川崎市高津区久本3丁目5番8号

日本エー・エム・ピー株式会社内

(72) 発明者 児玉 博亮

神奈川県川崎市高津区久本3丁目5番8号

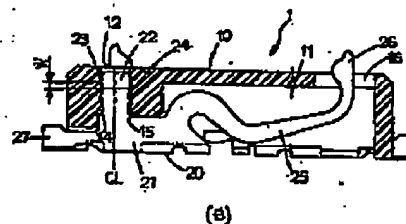
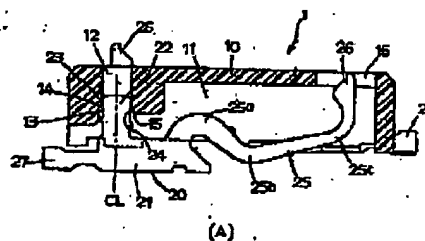
日本エー・エム・ピー株式会社内

(54) 【発明の名称】 電気コネクタ

(57) 【要約】

【課題】 ハウジングに係止固定される少なくとも1対の係止突起を中心線に対して非対称の位置としたコンタクトを有し、そのコンタクトの挿入が容易に行える電気コネクタを提供する。

【解決手段】 電気コネクタ1は、ハウジング10と、ハウジング10のコンタクト取付穴12に係止固定されるコンタクト取付部22を有するコンタクト20とを具備している。コンタクト取付部22の両側には、コンタクト20の挿入方向に沿って互いに所定間隔離れて位置し、コンタクト20の中心線CLに対して非対称となる少なくとも1対の第1係止突起23及び第2係止突起24が突出形成されている。コンタクト取付穴12には、コンタクト20の挿入時に第1及び第2係止突起23、24の双方が略同時に当接する1対の第1傾斜面14及び第2傾斜面15を有するコンタクト挿入口13が設けられている。



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【特許請求の範囲】

【請求項1】 コンタクト取付穴を有するハウジングと、該ハウジングの前記コンタクト取付穴に係止固定されるコンタクト取付部を有するコンタクトとを具備した電気コネクタにおいて、

前記コンタクト取付部の両側に、前記コンタクト取付穴に係止固定されると共に、前記コンタクトの挿入方向に沿って互いに所定間隔離れて位置し、前記コンタクトの中心線に対して非対称となる少なくとも1対の第1及び第2係止突起を突出形成し、

前記コンタクト取付穴に、前記コンタクトの挿入時に前記第1及び第2係止突起の双方が略同時に当接する1対の第1及び第2傾斜面を有するコンタクト挿入口を設けたことを特徴とする電気コネクタ。

【請求項2】 コンタクト取付穴を有するハウジングと、該ハウジングの前記コンタクト取付穴に係止固定されるコンタクトとを具備し、該コンタクトが、基部と、該基部の一侧から延出する半田タイン部と、前記基部の他側から延出する、先端に相手基板の下面に接触する接触部を有する片持梁状のばね部と、前記基部の前記半田タイン部と前記ばね部との間から上方に延出する、前記取付穴に係止固定されるコンタクト取付部とを具備している電気コネクタにおいて、

前記コンタクト取付部の前記ばね部側の側縁に、前記コンタクト取付穴に係止固定される少なくとも1つの係止突起を設け、前記コンタクト取付部の前記半田タイン部側の側縁が、前記コンタクト取付穴の直線状側壁に沿う直線状側縁となっていることを特徴とする電気コネクタ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、ハウジングに係止固定される係止突起を有するコンタクトを具えた電気コネクタに関するものである。

【0002】

【従来の技術】 従来のこの種の電気コネクタとして、例えば、図4に示すものが知られている（米国特許第5,064,391号公報参照）。この電気コネクタ100は、ハウジング101と、ハウジング101に係止固定される複数のコンタクト103と、これらコンタクト103を覆うようにハウジング101に設けられた導電性シェル102とからなっている。

【0003】 コンタクト103の各々には、図4(B)に示すように、ハウジング101のコンタクト受容溝106に係止固定される1対の係止突起104、105が両側から突出形成されている。そして、係止突起104、105の位置は、コンタクト103の挿入方向に沿って互いにHの距離だけ離れており、コンタクト103の中心線CLに対して非対称となっている。このように係止突起104、105の位置を非対称としたのは、隣

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接するコンタクト103、103間のピッチを狭くすることを可能にするためである。一方、コンタクト103に係止固定されるハウジング101のコンタクト受容溝106は、コンタクト挿入端に向けて幅広となるコンタクト挿入口107を有し、コンタクト103の挿入を容易にしている。

【0004】 又、従来の他の電気コネクタとして、例えば、図5に示すものが知られている。（実開平3-95584号公報参照）

この電気コネクタ300は、並列に設けられた複数のコンタクト取付穴311を有するハウジング310と、ハウジング310のコンタクト取付穴311に係止固定される複数のコンタクト320と、ハウジング310内に挿入されたフラットケーブル340をコンタクト320の接触部325に対し押圧するスライダ330とを具備している。

【0005】 このうち、コンタクト320の各々は、基部321と基部321の一侧から延出する、回路基板350に半田接続される半田タイン部326と、基部321の他側から延出する、先端にフラットケーブル340の下面に接触する接触部325を有する片持梁状のばね部324と、基部321の半田タイン部326とばね部324との間から上方に延出する、コンタクト取付穴311に係止固定されるコンタクト取付部322とを具備している。そして、コンタクト取付部322の半田タイン部326側の側縁には、コンタクト取付穴311に係止固定される2つの係止突起323を設け、コンタクト取付部322のばね部324側の側縁は、コンタクト取付穴311の直線状側壁に沿う直線状側縁となっている。

【0006】

【発明が解決しようとする課題】 しかしながら、図4に示す従来の電気コネクタ100にあっては、コンタクト103をハウジング101のコンタクト受容溝106に挿入する際に、Hの距離だけ先方に位置する一方の係止突起105がコンタクト挿入口107の片側壁に他方の係止突起104が他方壁に当接するよりも先に当接するため、コンタクト103が図4(B)に示すA方向に回転してコンタクト103の挿入が容易に行えないという問題点があった。

【0007】 又、図5に示す従来の電気コネクタ300にあっては、コンタクト320において、コンタクト取付穴311に係止固定される係止突起323が、コンタクト取付部322の半田タイン部326側の側縁に設けられ、フラットケーブル340の下面に接触する接触部325を有するばね部324側の側縁に設けられていない。スライダ330をハウジング310内に挿入してフラットケーブル340をコンタクト320の接触部325に押圧する際に、ばね部324は下方に向けて撓みコンタクト取付部322にばね部324側に向けて回転す

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る回転モーメントが生じることになるが、この回転モーメントにより係止突起323のコンタクト取付穴311に対する係止力が弱まり、コンタクト取付部322のコンタクト取付穴311に対する姿勢が傾斜してしまうことがあった。このため、ばね部324の先端にある接触部325のフラットケーブル340との接触点の位置が下方にずれ、所定の接触力を維持しづらいという問題があった。

【0008】従って、本発明の目的は、ハウジングに係止固定される少なくとも1対の係止突起の位置を中心線に対して非対称の位置としたコンタクトを有し、そのコンタクトの挿入が容易に行える電気コネクタを提供することにある。

【0009】又、本発明の他の目的は、コンタクトにおけるコンタクト取付部のコンタクト取付穴に対する姿勢を維持することにより、接触部の相手基板との接触点の位置を保ち、所定の接触力を確実に維持することができる電気コネクタを提供することにある。

【0010】

【課題を解決するための手段】本発明に係る電気コネクタは、コンタクト取付穴を有するハウジングと、該ハウジングの前記コンタクト取付穴に係止固定されるコンタクト取付部を有するコンタクトとを具備した電気コネクタにおいて、前記コンタクト取付部の両側に、前記コンタクト取付穴に係止固定されると共に、前記コンタクトの挿入方向に沿って互いに所定間隔離れて位置し、前記コンタクトの中心線に対して非対称となる少なくとも1対の第1及び第2係止突起を突出形成し、前記コンタクト取付穴に、前記コンタクトの挿入時に前記第1及び第2係止突起の双方が略同時に当接する1対の第1及び第2傾斜面を有するコンタクト挿入口を設けたことを特徴としている。

【0011】又、本発明に係る電気コネクタは、コンタクト取付穴を有するハウジングと、該ハウジングの前記コンタクト取付穴に係止固定されるコンタクトとを具備し、該コンタクトが、基部と、該基部の一端から延出する半田タイン部と、前記基部の他側から延出する、先端に相手基板の下面に接触する接触部を有する片持梁状のばね部と、前記基部の前記半田タイン部と前記ばね部との間から上方に延出する、前記コンタクト取付穴に係止固定されるコンタクト取付部とを具備している電気コネクタにおいて、前記コンタクト取付部の前記ばね部側の側縁に、前記コンタクト取付穴に係止固定される少なくとも1つの係止突起を設け、前記コンタクト取付部の前記半田タイン部側の側縁が、前記コンタクト取付穴の直線状側壁に沿う直線状側縁となっていることを特徴としている。

【0012】

【発明の実施の形態】本発明の実施の形態を図面を参照して説明する。図1は本発明の一実施形態の電気コネク

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タを示し、(A)は平面図、(B)は正面図である。図2は図1(A)の2-2線に沿った断面を示し、(A)は所定のコンタクトのハウジングへの係止開始状態を示す断面図、(B)は前記コンタクトのハウジングへの係止固定後の状態を示す断面図である。但し、コンタクトは断面していない。

【0013】図1及び図2において、電気コネクタ1は、複数のコンタクト取付穴12を有するハウジング10と、ハウジング10のコンタクト取付穴12に係止固定されるコンタクト取付部22を有する複数のコンタクト20とを具備している。

【0014】コンタクト20の各々は、金属板を打ち抜くことによって形成されるものであり、基部21と、基部21の左側(図2における左側)から延出し、基板上のバッドに半田接続される半田タイン部27と、基部21の右側から延出し、先端に相手基板に設けられたバッドに接触する接触部26を有する片持梁状のばね部25と、基部21の半田タイン部27とばね部25との間から上方に突出するコンタクト取付部22とを具備している。ばね部25は、基部21の右側から上方に延びると共に第1湾曲部25aを介して斜め下方に延び、更に第2湾曲部25bを介して斜め上方に延びている。接触部26は、ばね部25の先端25cから上方に延びている。

【0015】コンタクト20のコンタクト取付部22の両側には、ハウジング10のコンタクト取付穴12の対向側壁に係止固定される複数対(この実施形態にあっては2対)の第1係止突起23及び第2係止突起24が突出形成されている。第1係止突起23及び第2係止突起24は、コンタクト20の挿入方向(図2(B)における下から上への方向)に沿って互いに間隔Wだけ離れて位置し、コンタクト20の中心線CLに対して非対称となっている。第1係止突起23及び第2係止突起24のコンタクト挿入方向前面は、コンタクト取付部22が容易にコンタクト取付穴12に挿入されるように傾斜面で形成されている。

【0016】ハウジング10には、コンタクト20が收容される複数のコンタクト收容通路11が横方向(図1(A)における上下方向)に並列に設けられ、各コンタクト收容通路11にはコンタクト取付部22が係止固定されるコンタクト取付穴12及び接触部26が突出する接触部用開口16が設けられている。コンタクト取付穴12及び接触部用開口16は、ハウジング10の横方向において交互に設けられている(図1(A)参照)。コンタクト取付穴12は、コンタクト收容通路11から上方に延びてハウジング10の上面に貫通している。コンタクト取付穴12には、コンタクト20の挿入時に第1係止突起23及び第2係止突起24の双方が略同時に当接する1対の第1傾斜面14及び第2傾斜面15を有するコンタクト挿入口13が設けられている。

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【0017】コンタクト20のコンタクト取付部22をハウジング10のコンタクト取付穴12に挿入し、係止固定する際には、まず、図2(A)に示すように、コンタクト取付部22の第1係止突起23及び第2係止突起24のそれぞれがコンタクト挿入口13の第1傾斜面14及び第2傾斜面15に略同時に当接する。このため、コンタクト挿入の際に、第1係止突起23及び第2係止突起24によってコンタクト取付部22がコンタクト取付穴12の中心線に対して傾かず、コンタクト20の挿入が容易に行える。そして、コンタクト取付部22を更に押し込むと、図2(B)に示すように、コンタクト取付部22の第1係止突起23及び第2係止突起24がコンタクト取付穴12の対向側壁に食い込み、コンタクト取付部22はコンタクト取付穴12に係止固定される。この際に、コンタクト取付部22がコンタクト取付穴12の中心線に対して傾かない状態でハウジング10に固定されるので、接触部28の上下方向(図2(A)における上下方向)の高さ位置がばらつかず、安定する。

【0018】次に、本発明の他の実施形態を図3を参照して説明する。図3は、本発明の電気コンタクトの他の実施形態の断面図である。

【0019】図3において、電気コネクタ200は、図1及び図2に示す電気コネクタ1と同様に、複数のコンタクト取付穴212を有するハウジング210と、ハウジング210のコンタクト取付穴212に係止固定される複数のコンタクト220とを具備している。ハウジング210は、図1及び図2に示す電気コネクタ1のハウジング10と略同様の構成を有し、横方向(図3の紙面に対して直交する方向)に並列に設けられた、コンタクト220が収容される複数のコンタクト収容通路211を具備している。各コンタクト収容通路211には、後述するコンタクト取付部222が係止固定されるコンタクト取付穴212及び接触部225が突出する接触部用開口213が設けられている。そして、コンタクト取付穴212及び接触部用開口213は、ハウジング210の横方向において交互に配置されている。

【0020】コンタクト220の各々は、図1及び図2に示す電気コンタクト1のコンタクト20と同様に、金属板を打ち抜き加工することによって形成されるものであり、基部221と、基部221の左側(図3における左側)から延出する、回路基板(図示せず)に半田接続される半田タイン部226と、基部221の右側から延出する、先端に相手基板(図示せず)の下面に接触する接触部225を有する片持梁状のばね部224と、基部221の半田タイン部226とばね部224との間から上方に延出する、コンタクト取付穴212に係止固定されるコンタクト取付部222とを具備している。ばね部224は、基部221の右側上部から上方に延びると共に、第1湾曲部224aを介して斜め下方に延び、更に第2湾曲部224bを介して斜め上方に延びている。接

触部225は、ばね部224の先端部224cから上方に延びている。

【0021】コンタクト220のコンタクト取付部22の構成は、図1及び図2に示す電気コネクタ1のコンタクト20のコンタクト取付部22の構成と相違している。即ち、コンタクト取付部222のばね部224側の側縁212aには、コンタクト取付穴212に係止固定される2つの係止突起223a、223bが設けられ、コンタクト取付部222の半田タイン部226側の側縁212bは、コンタクト取付穴212の直線状側壁に沿う直線状側縁となっている。図5に示す従来例の電気コネクタ300のコンタクト320と異なり、コンタクト取付部222のばね部224側の側縁212aに、コンタクト取付穴212に係止固定される2つの係止突起223a、223bが設けられているので、相手基板をコンタクト220の接触部225に接触させる際に、コンタクト取付部222に作用するばね部224側への回転モーメントにより係止突起223がコンタクト取付穴212の側壁212aに食い付き、係止突起223のコンタクト取付穴212の側壁212aに対する係止力が弱まらずにコンタクト取付部222のコンタクト取付穴212に対する姿勢が保たれる。このため、ばね部224の先端にある接触部225の相手基板との接触点の位置が下方にずれることなく、所定の接触力を維持することができる。一方、コンタクト取付部222の半田タイン部226側の側縁212bはコンタクト取付穴212の直線状側壁に沿う直線状側縁となっているので、コンタクト取付部222のコンタクト取付穴212への挿入時にコンタクト取付部222の半田タイン部226側の側縁212bはコンタクト取付穴212の直線状側壁に沿って案内され、挿入後において前記側縁212bは前記側壁により姿勢維持がなされる。即ち、コンタクト取付部222の半田タイン部226側の側縁212bに係止突起を設けていないので、コンタクト取付部222の挿入時にその係止突起がコンタクト取付穴212の側壁に接触することによって回転モーメントが生じない。

【0022】

【発明の効果】請求項1に係る電気コネクタによれば、コンタクト取付部に、コンタクトの挿入方向に沿って互いに所定間隔離れて位置し、コンタクト中心線に対して非対称となる少なくとも1対の第1及び第2係止突起を突出形成し、コンタクト取付穴に、コンタクト挿入時に第1及び第2係止突起の双方が略同時に当接する1対の第1及び第2傾斜面を有するコンタクト挿入口を設けているので、コンタクト取付部をコンタクト取付穴に挿入する際に、第1係止突起及び第2係止突起によってコンタクト取付部がコンタクト取付穴の中心線に対して傾かず、コンタクトの挿入が容易に行えたと共に、コンタクトの接触部の位置がばらつかず安定する。

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【0023】又、請求項2に係る電気コネクタによれば、コンタクト取付部のばね部側の側縁に、コンタクト取付穴に係止固定される少なくとも1つの係止突起を設けているので、相手基板をコンタクトの接触部に接触させる際に、コンタクト取付部に作用するばね部側への回転モーメントにより係止突起がコンタクト取付穴の側壁に食い付き、係止突起のコンタクト取付穴の側壁に対する係止力が弱まらずにコンタクト取付部のコンタクト取付穴に対する姿勢が保たれる。このため、ばね部の先端にある接触部の相手基板との接触点の位置が下方にずれることなく、所定の接触力を維持することができる。

又、コンタクト取付部の半田タイン部側の側縁が、コンタクト取付穴の直線状側壁に沿う直線状側縁となっているので、コンタクト取付部のコンタクト取付穴への挿入時にコンタクト取付部の半田タイン部側の側縁はコンタクト取付穴の直線状側壁に沿って案内され、挿入後において、半田タイン部側の側縁はコンタクト取付穴の直線状側壁により姿勢維持がなされる。

【図面の簡単な説明】

【図1】本発明の電気コネクタを示し、(A)は平面図、(B)は正面図である。

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*【図2】図1(A)の2-2線に沿った断面を示し、(A)は1つのコンタクトのハウジングへの係止開始状態を示す断面図、(B)は前記コンタクトのハウジングへの係止固定後の状態を示す断面図である。

【図3】本発明の電気コネクタの他の実施形態の断面図である。

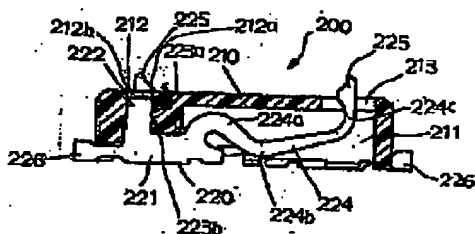
【図4】従来例の電気コネクタを示し、(A)は斜視図、(B)はコンタクトの要部を示す要部断面図である。

【図5】他の従来例の電気コネクタの断面図である。

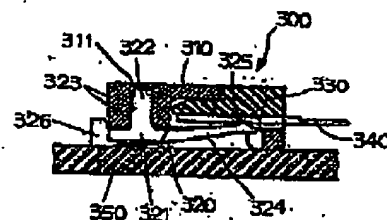
【符号の説明】

- 1、200 電気コネクタ
- 10、210 ハウジング
- 12、212 コンタクト取付穴
- 13 コンタクト挿入口
- 14 第1傾斜面
- 15 第2傾斜面
- 20、220 コンタクト
- 22、222 コンタクト取付部
- 23 第1係止突起
- 24 第2係止突起

【図3】



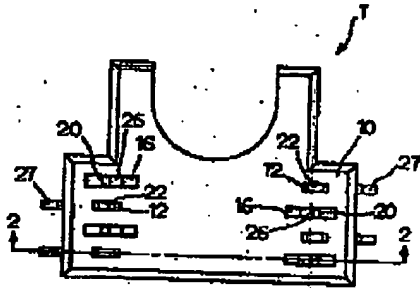
【図5】



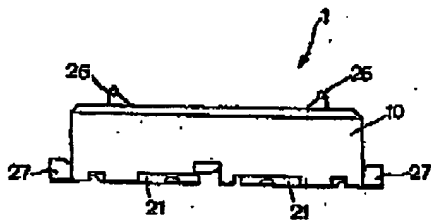
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【図1】

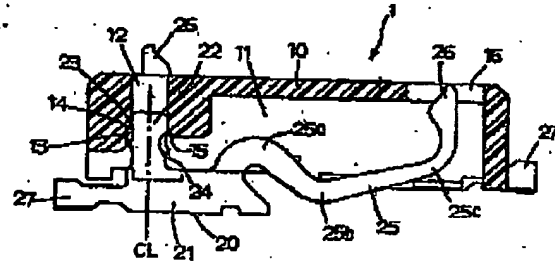


(A)

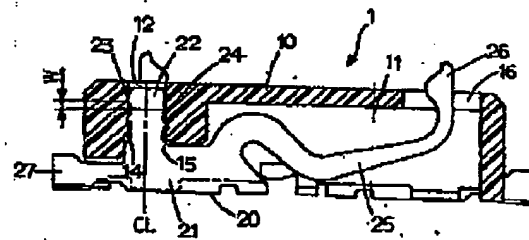


(B)

【図2】



(A)

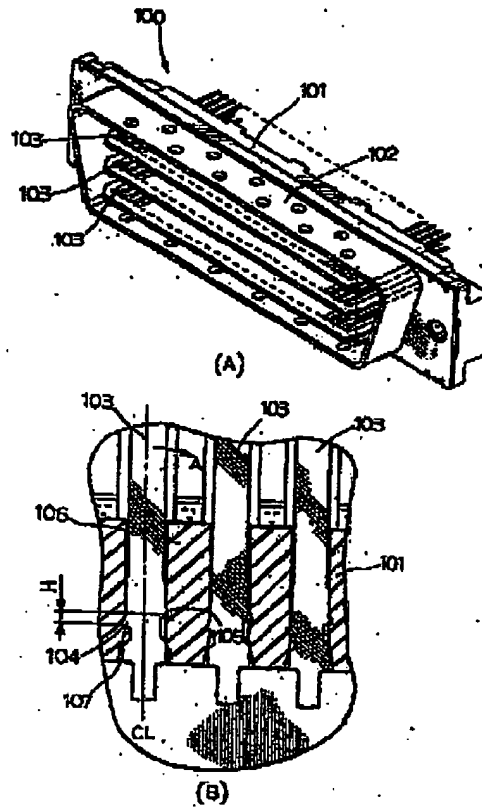


(B)

(7)

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【図4】



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